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## A STUDY OF ROOSTING HOLES OF THE RED-SHAFTED FLICKER

By EMERSON A. STONER

WITH THREE ILLUSTRATIONS

IN A FAR CORNER of the cemetery in Benicia, California, is a small shack, fourteen by twenty feet, built of redwood and called the "pest house", for the reason that at infrequent intervals some case of small pox is quarantined therein. For several years there has been no occupant, and because the building is not often approached it has resulted that the walls on each of its four sides have been disfigured by the characteristic roosting holes drilled through the one-inch boards by Red-shafted Flickers (*Colaptes cafer collaris*). At the present time there are seven large holes completed or of sufficient size to allow the entrance of the birds, and in addition there are nine smaller excavations the completion of which the birds have either postponed or abandoned.

This is not the only building so perforated by flickers in Benicia, but it may be cited to illustrate this characteristic habit of the western bird, a trait not often shared by the flicker of the eastern states.



Fig. 25. "PEST HOUSE", BENICIA, CALIFORNIA, USED AS A BUNK HOUSE BY RED-SHAFTED FLICKERS.

The common impression of the casual passer-by seems to be that these excavations are made by some woodpecker for nesting purposes. However, it is very evident that they have no connection with nidification, but that the primary object of these excavations is to provide sleeping quarters. I am inclined to believe that there is also at times an element of drilling simply "for the fun of it"; especially does this seem to be the case when a number of holes are made in close proximity to each other and lead to practically the same point in the interior.

Any one of the holes in the building referred to above allows access to the entire interior, which is unlighted except through the excavations made by the bird. From his entrance he may get a "bird's-eye view" of a few pieces of

rough furniture, namely a bed supported by a box at each corner, a small stove, a table and a chair, and a few kitchen utensils. That the bird would be in search of a nesting site in such a situation is quite out of the question. Any support on which the bird might settle himself would be entirely dissimilar to the secure receptacle afforded by the usual cavity excavated by this species in a dead limb for the purpose of laying its eggs. Furthermore, the holes are drilled after the breeding season, in the fall or early winter months. At the present writing a fresh hole is nearly completed in this building. Though it is true our California winters in the Sonoran zones are not severe, *collaris* has no doubt discovered that it is much more comfortable to be indoors, especially on frosty and rainy nights. Any evening at this season a passer-by may frighten several flickers from the holes in the pest house.

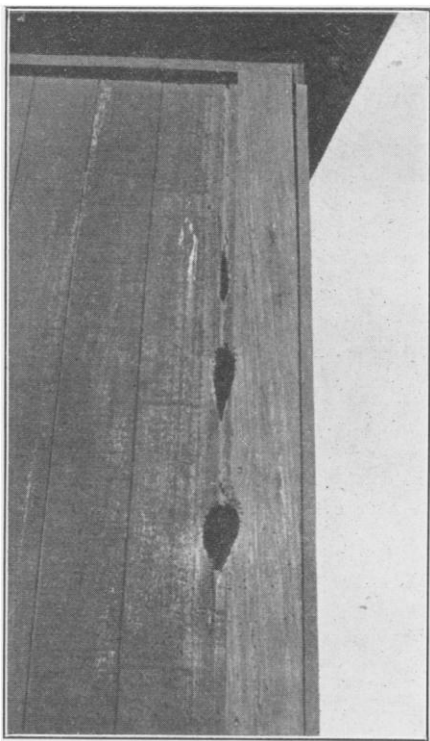


Fig. 26. HOLES DUG BY RED-SHAFTED FLICKERS TO OBTAIN SLEEPING QUARTERS.

At the approach of the breeding season there is a sudden exodus of flickers from Benicia and the immediate vicinity. This is no doubt due to the scarcity of suitable timber here for their nesting holes. During this season they are usually entirely absent, though in Contra Costa County on the opposite side of the Carquinez Straits, as well as in other sections of the San Francisco Bay region, one may find them breeding quite commonly. Absence of the flicker from our immediate locality during the breeding season is cited as further evidence that the holes made in buildings are not for the purpose of housing the eggs and young.

The dimensions of each of the larger holes in the "pest house" at their greatest diameters, as well as other interesting data in connection with the excavations outlined in the accompanying sketch (see fig. 27), are as follows.

a.  $4\frac{1}{2}$  inches by 4 inches. This excavation was made between the top board of the window trimming and cornice, which latter consists of a plain one by ten inch board encircling the building directly under the projecting roof. In the interior, the top of the window casing offers an immediate roosting place for the bird. This projection is four inches wide and three feet long. It is littered with droppings as is also the floor directly below.

b. Four inches by four and one-half inches. This is six inches to the right of *a* and opens up onto the same ledge. A square piece of board has been nailed from the inside in order to cover up this hole, which may account for the two excavations so close together.

c. Three inches by two and three-quarters inches. Opening made within

the angle formed by the junction of the corner board and the cornice. On the inside the surface of the board for some six inches below the cavity has been pecked away for about half its thickness. The projection used by the birds for roosting is forty-two inches below the hole and consists of a three inch brace encircling the building on the interior, to which the side boards are nailed at a point about half-way up from the floor. This projection is littered with droppings for some distance each side of the hole, as is also the floor underneath. On approaching from the outside a person could hear the bird which was using this perch scramble up the inside of the wall to make its exit.

*d.* Two and one-half by five inches. This hole is six feet from the ground alongside the corner-board. The crack in this case is so near the corner-board

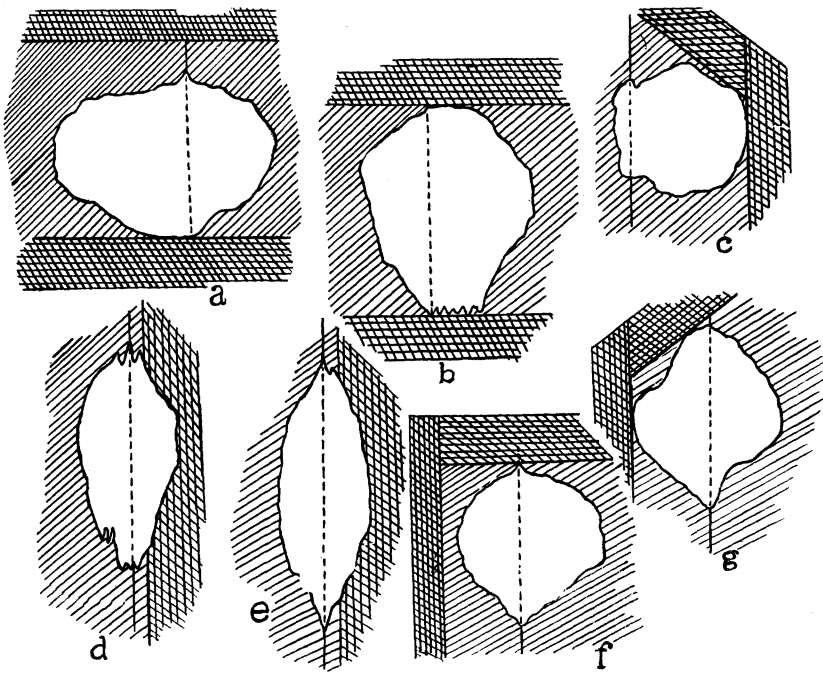


Fig. 27. SKETCHES OF SEVEN ROOSTING HOLES EXCAVATED IN THE "PEST HOUSE", BENICIA, CALIFORNIA, BY RED-SHAFTED FLICKERS. APPROXIMATELY 72 CUBIC INCHES OF WOOD HAD BEEN DISPLACED BY THE BIRDS IN THIS BUILDING.

that it was impossible to widen the hole proportionately in each direction without also attacking that board. This made a two-inch thickness to penetrate and accounts for the fact that the opening is so elongated. The hole opens directly onto a shelf, on which one of the birds roosts alongside a one-gallon oil can. The shelf is covered with droppings of the birds, as is also an up-turned wooden tub on the floor below.

*e.* One and three-quarters by six inches. This opening is eight inches above *d*, and the drop on the inside to the shelf is the same distance. Part of the corner board is chipped off here also. There is no apparent advantage in this opening, as the one below serves the same purpose.

f. Three and one-quarter by three and one-half inches. This opening is in the upper corner of the building, within the angle formed by the corner board and the trimming beneath the roof. The bird using this hole roosts on a two by three inch board forty inches below the hole, as is evidenced by the accumulation of droppings along this board and on the floor directly below.

g. Three and one-quarter by four inches. Between the angle formed by the juncture of the corner-board and the cornice, a similar position to c, on the opposite side of the building. Here a drop of forty-two inches is required to reach the same supporting boards to which more direct access is secured by making entrance through holes d and e.

Observation of these holes discloses the fact that the bird prefers, or more probably requires, a projection or some other foothold to which it may cling while chipping out a hole in a flat surface such as the side of a building. Each of the holes, as well as the incomplected ones not sketched, are drilled close against a board used as trimming (shown in the sketch by heavier shading) which furnishes a support to the prospective lodger. The broken lines drawn through the figures to show location of the joints between the boards would indicate that operations are commenced along this juncture, apparently for the reason that the crack facilitates the beginning of the project, though the boards are tongued and grooved and fit snugly together.

*Benicia, California, January 12, 1922.*

## A LAW GOVERNING THE ELEVATION OF THE NESTING SITE

By CHARLES KETCHUM AVERILL

IN Chapman's "Warblers of North America" particular attention is given to the vertical range in the trees of the arboreal species in their summer homes. Thus, the Cape May "lives in the tops of high coniferous trees". The Blackburn "is a lover of deep mixed growths and the upper branches of the biggest conifers". Other species of the same genus, *Dendroica*, are more lowly in range. The Prairie Warbler keeps near the ground. Of the Chestnut-sided we note that "its beat lies between the ground and the tops of small deciduous trees". In this way we may note the habit of each species and make a list of those that are high ranging and another of those that range low.

From the same source we may learn the nesting height of each species, and place this information opposite each. In the *Auk* (vol. 37, October, 1920, p. 572) I called attention to the fact that as length of wing is a factor in ease and power of flight, and the tail an impediment to flight, the bird with the longer wing and shorter tail might be called the better flier, and species so proportioned were the ones making the longer migrations. Taking the wing and tail lengths from Ridgway's "Birds of North and Middle America", the figures being the average given for the male bird in every case, and subtracting the latter from the former we may complete the table of the genus *Dendroica* by placing the wing and tail difference in a third column.